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*Observations for ascertaining the Length of the Pendulum at Madras in the East Indies, Latitude* 13° 4′ 9″·1 *N.; with the Conclusions drawn from the same. By* John Goldingham, *Esq. F.R.S.* Read January 31, 1822. [*Phil. Trans.* 1822, *p.* 127.]

The observations detailed in this paper are comprised in two series. By the result of the first, the pendulum of experiment, which was constructed upon the same principles as that used by Captain Kater, and described in the Philosophical Transactions for 1819, was found to make 86166,108 vibrations in twenty-four hours, and by the result of the second series, 86166,048, the mean being 86166,078; so that the result of each series differs from the mean only $\frac{3}{1000}$th of a beat in twenty-four hours.

The length of the seconds pendulum at Madras, deduced as the mean of these two series of observations, is 39·026302 inches of Sir George Shuckburgh's scale, at the temperature of 70° in vacuo, and at the level of the sea.

By comparing this with the length of the pendulum vibrating seconds in London, we obtain $\frac{1}{297.56}$ as the ellipticity of the earth, which is very nearly the mean deduced from the observations of Captain Kater in England, and those of the French mathematicians.

*Account of an Assemblage of Fossil Teeth and Bones of Elephant, Rhinoceros, Hippopotamus, Bear, Tiger, and Hyæna, and sixteen other Animals; discovered in a Cave at Kirkdale, Yorkshire, in the year* 1821: *with a comparative View of five similar Caverns in various Parts of England, and others on the Continent. By the Rev.* William Buckland, *F.R.S. F.L.S. Vice President of the Geological Society of London, and Professor of Mineralogy and Geology in the University of Oxford, &c. &c. &c.* Read February 21, 1822. [*Phil. Trans.* 1822, *p.* 171.]

The rock in which the cavern, mentioned in the title of this paper, is formed, is that species of limestone called Oolite. Its greatest length is from 250 to 300 feet, and its breadth and height vary from two to seven feet, there being few places in which it is possible to stand upright. Its bottom was covered by a sediment of mud, and the roof and sides, as well as the surface of the mud, were incrusted by stalactitic matter. The animal remains were found, not upon the surface, but in the lower part only of this muddy deposit, and in the stalagmitic accumulations beneath it, and were thus remarkably preserved from decay. The teeth and bones hitherto discovered are those of the hyæna, fox, bear, of an animal of the tiger kind, of the elephant, rhinoceros, hippopotamus, and horse, of the ox and some species of deer, of the water rat and the rabbit. They were strewed promiscuously over the bottom of the cave; the bones, with very few exceptions, being broken and apparently gnawed; for upon many of them marks were detected fitting the form of the canine teeth of the hyænas that were found there: whence it appears probable that this